STUDIES IN THE HELIANTHEAE (ASTERACEAE). VI.

ADDITIONS TO THE GENUS, CALEA

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One new species has been encountered among collections from Ecuador and the generic limits between Calea and the segregates Geissopappus and Tyleropappus are reevaluated.

Calea kingii H.Robinson, sp. nov.

Plantae frutescentes usque ad 4 dm altae multo ramosae. Caules teretes striati dense pilosae glabrescentes rubescentes. Folia opposita, petiolis 3-7 mm longis; laminae late ovatae vel deltoideae plerumque 2.0-5.5 cm longae 1.2-4.5 cm latae fere ad basem trinervatae base truncatae vel late rotundatae margine serratae vel crenato-serratae apice late acutae vel breviter acuminatae supra dense scabrellae subtus plerumque in nervis dense hirsutae. Inflorescentiae subumbellatae, pedicellis usque ad 1 cm longis dense puberulis. Capitula 10-14 mm alta 8-10 mm lata; squamae involucri ca. 20 flavescentes in apicem brunnescentes ca. 4-seriatae valde inaequilongae 2-8 mm longae 2.0-2.5 mm latae oblongae apice late rotundatae et subscariosae extus glabrae; paleae 6-7 mm longae ca. 2.5 mm latae margine scariosae superne plus minusve laciniatae apice anguste acuminatae. Flores radii 6-8; corollae flavae ca. 8.5 mm longae glabrae, tubis ca. 4 mm longis, limbis ellipticis 4.5 mm longis et 1.5 mm latis. Flores disci ca. 20; corollae aurantiacae ca. 7 mm longae glabrae, tubis 3 mm longis, lobis ca. 2 mm longis et 0.5 mm latis; filamenta ca. 2 mm longa, in parte superiore ca. 0.4 mm longa; thecae ca. 2 mm longae; appendices antherarum ca. 0.4 mm longae. Achaenia prismatica ca. 2.5 mm longa superne setifera; squamae pappi ca. 25 ca. 6 mm longae late lineatae apice filiformes. Grana pollinis ca. 25μ diam. spinosa.

TYPE: ECUADOR: Azuay: along the road to Girón, ca. 10 kms NE of Girón. Elev. ca. 8600 ft., locally abundant, ca. 1/3 meters tall, open sun, ray flowers yellow, disc flowers orange-yellow. February 3, 1974. R.M.King 6681 (Holotype US); Azuay: Banos near Cuenca, Elev. 2600 meters, July 18, 1939. Penland & Summers

1067 (US).

The new species is most closely related to Calea huigrensis Blake, also of Ecuador. The Blake species, from the region of Chimborazo, differs by the entire margins of the leaves and the mearly scabrellous rather than hirsute undersurfaces of the leaf veins. Blake's original description cites heads with 3 rays but more recent collections seem to have mostly 5 or 6 rays. The number of rays is still less than is usual in C. kingii and the limb of the rays is only about 3 mm long. Calea jelskii Hieron. of northern Peru is also closely related but differs by the heads with narrower more coriaceous phyllaries and 3-4? rays.

The genus Calea shows great variation in habit. The more familiar type, represented by the Ecuadorian species, is shrubby with subumbellate inflorescences. In Brazil, in contrast, there are some reduced tuberous forms with single long-pedunculate heads and there are various herbs with alternate or verticillate linear leaves. The genus has seemed a likely candidate for subdivision, but a basic unity is found in the broad inner phyllaries with many parallel resin ducts, in the rounded or slightly prismatic achenes, and in the pappus of 10 or more separate lobes or awns. The corolla lobes also are usually very elongate compared with those of closely related members of the Helianthaeae. In final analysis the genus Calea seems readily acceptable if it is simply expanded to include one unnatural segregate.

The genus Geissopappus Benth. shares all the basic characters of Calea except one, there are no paleae on the receptacle. Because of the lack of paleae Geissopappus was placed in the artificial tribe Helenieae by Bentham (1873) but that author did recognize the similarity of the genus to Calea. Geissopappus is typified by G. caleoides (DC.) Benth. and is essentially a new name for Schomburgkia DC. hom. illeg. Four species of very different habits are placed in the genus, including G. polycephalus Baker, a shrubby plant with herbaceous triangular-ovate leaves and numerous heads on short lateral branches, and G. gentianoides (DC.) Baker, a plant with a basal tuber, mostly subbasal coriaceous leaves and few heads on long erect peduncles. It seems obvious that the genus is unnatural. The lack of paleae also proves an unworkable character when some species of Calea are considered. Calea hymenolepis Baker has been included in that genus though it has only 1 or 2 paleae per head inside the outermost flowers. The conclusion at

this time is to reduce the genus Geissopappus to synonymy under Calea. Of the following four species only one has previously been placed in Calea.

Calea bahiensis (Mattfeld) H.Robinson, comb. nov.
Geissopappus bahiensis Mattfeld, Notizbl. Bot. Gart. Berlin 9: 390. 1925.

Calea caleoides (DC.) H.Robinson, comb. nov.
Schomburgkia caleoides DC., Prodr. 7: 294. 1838.

Calea gentianoides DC., Prodr. 5: 672. 1836.

Calea polycephala (Baker) H.Robinson, comb. nov.
Geissopappus polycephalus Baker in Mart., Fl. Bras. 6 (3): 279. 1884.

In 1931 Greenman named a new genus, Tyleropappus, from Cerro Duida in Venezuela. On the basis of pappus structure and lack of paleae Greenman correctly related the genus to Geissopappus. Examination of type material of Tyleropappus shows that it shares all the basic features of Calea except habit. A style illustrated by Greenman seems to show hairs on the shaft, but no such hairs have been seen under the microscope. It is the habit that seems to provide a basis for continuing to recognize the genus Tyleropappus. Calea has mostly opposite leaves with a few species such as C. hymenolepis having alternate leaves, but none have the leaves in a dense spiral like those of Tyleropappus.

One other genus, Brasilia Barroso, is in the close relationship of Calea. Habit and most features of Brasilia are as in typical Calea, but the pappus is distinctly different, having the segments fused into a basal tube that is densely hispid on the outer surface. Examination of specimens and photographs shows that the single species, B. sickii Barroso, is the same as Eupatorium robustum Glaziou, n.sp.?, Bull. Soc. Bot. Fr. lvi. mém. 3: 384. 1909. Names in the Glaziou list are usually treated as nom. nud. and it seems best to continue the practice for this question-marked name.

Acknowledgement

The R.M.King collection from Ecuador was collected during field work supported by the National Geo-

graphic Society.

Refrences

Barroso, G. M. 1962. Um novo gênero de Compositae. Arq. Jard. Bot. Rio de Janeiro 17: 19-20. (1959-1961).

Bentham, G. 1873. Notes on the classification, history, and geographical distribution of Compositae. J. Linn. Soc., Bot. 13: 335-577.

Greenman, J. M. 1931. Compositae—a new genus. in Gleason, H. A., Botanical results of the Tyler-Duida expedition. Bull. Torrey Bot. Club. 58: 486-487, pl. 39-40.